

I. IDENTIFICATION DATA

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| Thesis title: | Automated optimization of parameters of a gas spark ignition engine |
| Author's name: | Ashwin Srinivasa Raghavan |
| Type of thesis : | master |
| Faculty/Institute: | Faculty of Mechanical Engineering (FME) |
| Department: | Ú12120 |
| Thesis reviewer: | Ing. Jiří Vávra, Ph.D. |
| Reviewer's department: | Ú12201 |

II. EVALUATION OF INDIVIDUAL CRITERIA

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| Assignment | ordinarily challenging |
| <i>How demanding was the assigned project?</i> | |
| The assignment was adequate to the level of the knowledge and experience of international students of MAE study program. | |

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| Fulfilment of assignment | fulfilled with minor objections |
| <i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i> | |
| Due to COVID-19 situation, originally experimental assignment had to be modified to a simulation study. The student was provided with a GT Suite model from the previous master thesis. He updated the model according to the current experimental setup which is available in the engine laboratory of the University research center and added other physical models (e.g. of realistic thermocouples) and elaborated the knock model based on references. Then he applied the optimization routines on the model and designed full load curves taking into account major mechanical and thermal constraints including engine knock. This procedure was considered as a suitable substitution of the original goals. | |

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| Activity and independence when creating final thesis | C - good. |
| <i>Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.</i> | |
| The student attended consultations and presented results regularly. The thesis was submitted on time. Unfortunately, there was no time for the supervisor to check the final version. | |

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| Technical level | D - satisfactory. |
| <i>Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?</i> | |
| Student learned the basics of the GT Suite software for engine performance modelling. This section was thoroughly commented in the thesis report. He learned the usage of the GT Suite optimizer and a CAMEO software for the automatic optimizations and design of experiments. However, the student has not showed any of the Cameo procedures and the workflow. Any CAMEO and/or GT Optimizer files have not been attached to the thesis report for further use and verification. | |

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| Formal level and language level, scope of thesis | E - sufficient. |
| <i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i> | |
| The structure of the thesis is logical. However, some parts were done by a minimalistic way. e.g. the DoE and optimization part is not complete and should be described in a more detailed way. | |

Selection of sources, citation correctness**D - satisfactory.**

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

Selection of literature sources looks adequate. Many of the bibliographic citations do not meet any standards.

Any of the figures in the thesis were properly cross-referenced in the text.

Additional commentary and evaluation (optional)

Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

Please insert your comments here.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading.

The student commented properly only the GT Suite model preparation part. All other parts would deserve more care. The quality of graphical presentation can be considered very low. More importantly, the results cannot be verified and the presentation of the final optimizations results is not adequate.

The grade that I award for the thesis is **D - satisfactory**.

The supervisor has one request to the student. The CAMEO files and comments to them should be submitted to the supervisor before the final presentation.

Date: **31.8.2021**

Signature: